

UNIT TERMINAL OBJECTIVE

3-2 At the completion end of this unit, the paramedic student will be able to explain the pathophysiological significance of physical exam findings.

COGNITIVE OBJECTIVES

At the completion of this unit, the paramedic student will be able to:

- 3-2.1 Define the terms inspection, palpation, percussion, auscultation. (C-1)
- 3-2.2 Describe the techniques of inspection, palpation, percussion, and auscultation. (C-1)
- 3-2.3 Describe the evaluation of mental status. (C-1)
- 3-2.4 Evaluate the importance of a general survey. (C-3)
- 3-2.5 Describe the examination of skin, hair and nails. (C-1)
- 3-2.6 Differentiate normal and abnormal findings of the assessment of the skin. (C-3)
- 3-2.7 Distinguish the importance of abnormal findings of the assessment of the skin. (C-3)
- 3-2.8 Describe the examination of the head and neck. (C-1)
- 3-2.9 Differentiate normal and abnormal findings of the scalp examination. (C-3)
- 3-2.10 Describe the normal and abnormal assessment findings of the skull. (C-1)
- 3-2.11 Describe the assessment of visual acuity. (C-1)
- [3-2.12 Explain the rationale for the use of an ophthalmoscope. \(C-1\)](#)
- 3-2.13 Describe the examination of the eyes. (C-1)
- 3-2.14 Distinguish between normal and abnormal assessment findings of the eyes. (C-3)
- [3-2.15 Explain the rationale for the use of an otoscope. \(C-1\)](#)
- 3-2.16 Describe the examination of the ears. (C-1)
- 3-2.17 Differentiate normal and abnormal assessment findings of the ears. (C-3)
- 3-2.18 Describe the examination of the nose. (C-1)
- 3-2.19 Differentiate normal and abnormal assessment findings of the nose. (C-3)
- 3-2.20 Describe the examination of the mouth and pharynx. (C-1)
- 3-2.21 Differentiate normal and abnormal assessment findings of the mouth and pharynx. (C-3)
- 3-2.22 Describe the examination of the neck. (C-1)
- 3-2.23 Differentiate normal and abnormal assessment findings the neck. (C-3)
- 3-2.24 Describe the survey of the thorax and respiration. (C-1)
- 3-2.25 Describe the examination of the posterior chest. (C-1)
- 3-2.26 Describe percussion of the chest. (C-1)
- 3-2.27 Differentiate the percussion notes and their characteristics. (C-3)
- 3-2.28 Differentiate the characteristics of breath sounds. (C-3)
- 3-2.29 Describe the examination of the anterior chest. (C-1)
- 3-2.30 Differentiate normal and abnormal assessment findings of the chest examination. (C-3)
- 3-2.31 Describe special examination techniques related to the assessment of the chest. (C-1)
- 3-2.32 Describe the examination of the arterial pulse including rate, rhythm, and amplitude. (C-1)
- 3-2.33 Distinguish normal and abnormal findings of arterial pulse. (C-3)
- 3-2.34 Describe the assessment of jugular venous pressure and pulsations. (C-1)
- 3-2.35 Distinguish normal and abnormal examination findings of jugular venous pressure and pulsations. (C-3)
- 3-2.36 Describe the examination of the heart and blood vessels. (C-1)
- 3-2.37 Differentiate normal and abnormal assessment findings of the heart and blood vessels. (C-3)
- 3-2.38 Describe the auscultation of the heart. (C-1)
- 3-2.39 Differentiate the characteristics of normal and abnormal findings associated with the auscultation of the heart. (C-3)
- 3-2.40 Describe special examination techniques of the cardiovascular examination. (C-1)

- 3-2.41 Describe the examination of the abdomen. (C-1)
- 3-2.42 Differentiate normal and abnormal assessment findings of the abdomen. (C-3)
- 3-2.43 Describe auscultation of the abdomen. (C-1)
- 3-2.44 Distinguish normal and abnormal findings of the auscultation of the abdomen. (C-3)
- 3-2.45 Describe the examination of the female genitalia. (C-1)
- 3-2.46 Differentiate normal and abnormal assessment findings of the female genitalia. (C-3)
- 3-2.47 Describe the examination of the male genitalia. (C-1)
- 3-2.48 Differentiate normal and abnormal findings of the male genitalia. (C-3)
- 3-2.49 Describe the examination of the anus and rectum. (C-3)
- 3-2.50 Distinguish between normal and abnormal findings of the anus and rectum. (C-3)
- 3-2.51 Describe the examination of the peripheral vascular system. (C-1)
- 3-2.52 Differentiate normal and abnormal findings of the peripheral vascular system. (C-3)
- 3-2.53 Describe the examination of the musculoskeletal system. (C-1)
- 3-2.54 Differentiate normal and abnormal findings of the musculoskeletal system. (C-3)
- 3-2.55 Describe the examination of the nervous system. (C-1)
- 3-2.56 Differentiate normal and abnormal findings of the nervous system. (C-3)
- 3-2.57 Describe the assessment of the cranial nerves. (C-1)
- 3-2.58 Differentiate normal and abnormal findings of the cranial nerves. (C-3)
- 3-2.59 Describe the general guidelines of recording examination information. (C-1)
- 3-2.60 Discuss the considerations of examination of an infant or child. (C-1)

AFFECTIVE OBJECTIVES

At the completion of this unit, the paramedic student will be able to:

- 3-2.61 Demonstrate a caring attitude when performing physical examination skills. (A-3)
- 3-2.62 Discuss the importance of a professional appearance and demeanor when performing physical examination skills. (A-1)
- 3-2.63 Appreciate the limitations of conducting a physical exam in the out-of-hospital environment. (A-2)

PSYCHOMOTOR OBJECTIVES

At the completion of this unit, the paramedic student will be able to:

- 3-2.64 Demonstrate the examination of skin, hair and nails. (P-2)
- 3-2.65 Demonstrate the examination of the head and neck. (P-2)
- 3-2.66 Demonstrate the examination of the eyes. (P-2)
- 3-2.67 Demonstrate the examination of the ears. (P-2)
- 3-2.68 Demonstrate the assessment of visual acuity. (P-2)
- 3-2.69 Demonstrate the examination of the nose. (P-2)
- 3-2.70 Demonstrate the examination of the mouth and pharynx. (P-2)
- 3-2.71 Demonstrate the examination of the neck. (P-2)
- 3-2.72 Demonstrate the examination of the thorax and ventilation. (P-2)
- 3-2.73 Demonstrate the examination of the posterior chest. (P-2)
- 3-2.74 Demonstrate auscultation of the chest. (P-2)
- 3-2.75 Demonstrate percussion of the chest. (P-2)
- 3-2.76 Demonstrate the examination of the anterior chest. (P-2)
- 3-2.77 Demonstrate special examination techniques related to the assessment of the chest. (P-2)
- 3-2.78 Demonstrate the examination of the arterial pulse including location, rate, rhythm, and amplitude. (P-2)
- 3-2.79 Demonstrate the assessment of jugular venous pressure and pulsations. (P-2)

- 3-2.80 Demonstrate the examination of the heart and blood vessels. (P-2)
- 3-2.81 Demonstrate special examination techniques of the cardiovascular examination. (P-2)
- 3-2.82 Demonstrate the examination of the abdomen. (P-2)
- 3-2.83 Demonstrate auscultation of the abdomen. (P-2)
- 3-2.84 Demonstrate the external visual examination of the female genitalia. (P-2)
- 3-2.85 Demonstrate the examination of the male genitalia. (P-2)
- 3-2.86 Demonstrate the examination of the peripheral vascular system. (P-2)
- 3-2.87 Demonstrate the examination of the musculoskeletal system. (P-2)
- 3-2.88 Demonstrate the examination of the nervous system. (P-2)

DECLARATIVE

- I. Physical examination - approach and overview
 - A. Examination techniques and equipment
 - 1. Examination techniques
 - a. Inspection
 - b. Palpation
 - c. Percussion
 - d. Auscultation
 - 2. Measurement of vitals
 - a. Pulse
 - b. Respirations
 - c. Blood pressure
 - 3. Height and weight
 - 4. Equipment
 - a. Stethoscope
 - b. [Ophthalmoscope](#)
 - c. [Otoscope](#)
 - d. Blood pressure cuff
 - B. General approach
 - 1. Examine the patient systematically
 - 2. Place special emphasis on areas suggested by the present illness and chief complaint
 - 3. Keep in mind that most patients view a physical exam with apprehension and anxiety - they feel vulnerable and exposed
 - C. Overview of a comprehensive examination
 - 1. The categories of a physical exam should include
 - a. Mental status
 - b. General survey
 - c. Vital signs
 - d. Skin
 - e. HEENT
 - (1) Head
 - (2) Eyes
 - (3) Ears
 - (4) Nose
 - (5) Throat
 - f. Neck
 - g. Chest
 - h. Abdomen
 - i. Posterior body
 - j. Extremities
 - (1) Peripheral vascular
 - (2) Musculoskeletal
 - k. Neurologic exam
- II. Mental status
 - A. Appearance and behavior
 - 1. Assess for level of consciousness

- a. Alertness
 - b. Response to verbal stimuli
 - c. Response to touch or shake of shoulder (tactile)
 - d. Response to painful stimuli
 - e. Unresponsive
 - f. Possible findings
 - (1) Normal
 - (2) Drowsiness
 - (3) Obtundation
 - (a) Insensitive to unpleasant or painful stimuli by reducing level of consciousness by an anesthetic or analgesic
 - (4) Stupor
 - (a) State of lethargy and unresponsiveness
 - (b) Person seems unaware of surroundings
 - g. Coma
 - (1) State of profound unconsciousness
 - (2) Absence of spontaneous eye movements
 - (3) No response to verbal or painful stimuli
 - (4) Patient can not be aroused by any stimuli
 - h. Posture and motor behavior
2. Observe posture and motor behavior
- a. Pace
 - b. Range
 - c. Character
 - d. Appropriateness of movement
 - e. Possible findings
 - (1) Normal
 - (2) Restlessness
 - (3) Agitation
 - (4) Bizarre postures
 - (5) Immobility
 - (6) Involuntary movements
3. Dress, grooming, and personal hygiene
- a. Fastidiousness
 - b. Neglect
4. Facial expression
- a. Anxiety
 - b. Depression
 - c. Elation
 - d. Anger
 - e. Response to imaginary people or objects
 - f. Withdrawal
5. Manner, affect, and relation to person and things
- B. Speech and language
1. Assess
- a. Quantity
 - b. Rate
 - c. Loudness

- d. Fluency
 - e. Possible findings
 - (1) Aphasia
 - (2) Dysphonia
 - (3) Dysarthria
 - (4) Changes with mood disorders
- C. Mood
- 1. Assess
 - a. Nature
 - b. Intensity
 - c. Duration
 - d. Stability of abnormal mood
 - e. Risk of suicide
 - f. Possible findings
 - (1) Happiness
 - (2) Elation
 - (3) Depression
 - (4) Anxiety
 - (5) Anger
 - (6) Indifference
- D. Thought and perceptions
- 1. Assess thought processes
 - a. Logic
 - b. Relevance
 - c. Organization
 - d. Coherence of thought
 - e. Possible findings
 - (1) Loosening of associations
 - (2) Flight of ideas
 - (3) Incoherence
 - (4) Confabulation
 - (5) Blocking
 - 2. Assess thought content
 - a. Unusual thoughts
 - b. Unpleasant thoughts
 - c. Possible findings
 - (1) Obsessions
 - (2) Compulsions
 - (3) Delusions
 - (4) Feelings of unreality
 - 3. Assess perceptions
 - a. Unusual
 - b. Hearing things
 - c. Seeing things
 - d. Possible findings
 - e. Illusions
 - f. Hallucinations
- E. Assess insight and judgement

1. Insight into illness
 2. Level of judgement in making decisions or plans
 3. Possible findings
 - a. Recognition or denial of mental cause of symptoms
 - b. Bizarre, impulsive, or unrealistic judgement
- F. Memory and attention
1. Assess orientation
 - a. Time
 - b. Place
 - c. Person
 - d. Possible findings
 - (1) Disorientation
 2. Assess attention
 - a. Digit span
 - b. Serial sevens
 - c. Spelling backwards
 3. Assess remote memory (i.e. birthdays)
 4. Assess recent memory (i.e. events of the day)
 5. Assess new learning ability
- III. General survey
- A. Level of consciousness
1. Awake
 2. Alert
 3. Responsive
- B. Signs of distress
1. Assess for signs of distress
 2. Examples (not inclusive)
 - a. Cardiorespiratory insufficiency
 - (1) Labored breathing
 - (2) Wheezing
 - (3) Cough
 - b. Pain
 - (1) Wincing
 - (2) Sweating
 - (3) Protectiveness of a painful part
 - c. Anxiety
 - (1) Anxious face
 - (2) Fidgety movement
 - (3) Cold moist palms
- C. Apparent state of health
1. Acutely or chronically ill
 2. Frail
 3. Feeble
 4. Robust
 5. Vigorous
- D. Skin color and obvious lesions
1. Pallor

2. Cyanosis
3. Jaundice
4. Rashes
5. Bruises - ecchymosis
6. Scars
7. Discoloration
- E. Height and build
 1. Unusually tall or short
 2. Slender, lanky, muscular or stocky build
- F. Sexual development
 1. Are the following appropriate for the patient's age and gender
 - a. Voice
 - b. Hair
 - (1) Facial
 - (2) Axillary
 - (3) Groin
 - c. Breast size
- G. Weight
 1. Emaciated
 2. Slender
 3. Plump
 4. Obese
 - a. Concentrated
 - b. Distributed evenly
 5. Recent history of weight gain or loss
- H. Posture, gait and motor activity
 1. Preferred posture
 - a. Tripodal
 - b. Paralysis
 - c. Limpness
 - d. Ataxia
 - e. Restless or quiet
 - f. Involuntary motor activity
 - g. Ease of walking
 - (1) Balance
 - (2) Limp
 - (3) Discomfort
 - (4) Fear of falling
 - (5) Abnormal motor pattern
- I. Dress, grooming and personal hygiene
 1. How is the patient dressed
 - a. Appropriate for temperature and weather
 - b. Clean
 - c. Properly buttoned and zipped
 - d. Compare with clothing worn by people of similar age and social group
 - e. Shoes
 - (1) Clean
 - (2) Holes cut in them

- (3) Laces tied
 - (4) Slippers
 - f. Unusual jewelry
 - (1) Copper bracelet for arthritis
 - (2) Medical identification insignia
 - g. Hair, fingernails and use of cosmetics
 - (1) Reflect lifestyle, mood, and personality
 - (2) Grown out hair or nail polish may indicate decreased interest in appearance or help to estimate length of illness
 - h. Is grooming and hygiene appropriate for the patient's age, lifestyle, occupation and socioeconomic group?
 - J. Odors of breath or body
 - 1. Breath odors may indicate underlying conditions
 - a. Alcohol/ alcoholic beverage
 - b. Acetone
 - c. Infections
 - d. Liver failure
 - K. Facial expression
 - 1. Observe expression
 - 2. At rest, during conversation and during the examination
 - L. Vital signs
 - 1. Blood pressure
 - 2. Respirations
 - 3. Pulse
 - 4. Temperature
 - M. Additional assessment techniques
 - 1. Pulse oximetry
 - 2. Others
- IV. Anatomical regions
 - A. The skin
 - 1. Anatomy and physiology review
 - 2. Changes with age
 - 3. Techniques of exam
 - a. Inspect and palpate the skin
 - (1) Note the following characteristics
 - (a) Color
 - i) The red color of oxyhemoglobin and pallor due to lack of oxygen are best seen where the epidermis is thinnest
 - ii) The fingernails and lips and the mucous membranes of the mouth and palpebral conjunctiva
 - iii) In dark skinned persons, the palms and the soles may also be useful
 - (b) Moisture
 - (c) Temperature
 - (d) Texture
 - (e) Mobility and turgor
 - (f) Lesions

- b. Inspect and palpate the fingernails and toenails
 - (1) Note their color and shape
 - (2) Note if there are any lesions present
- c. Inspect and palpate the hair
 - (1) Note its quantity, distribution and texture
- 4. Abnormalities
 - a. Basic types of skin lesions
 - b. Skin colors
 - c. Skin tumors
 - d. Findings in or near the nails
 - (1) Clubbing
 - (2) Paronychia
 - (3) Onycholysis
 - (4) Terry's nails
 - (5) White spots
 - (6) Transverse white lines
 - (7) Psoriasis
 - (8) Beau's lines
- B. Head, ears, eyes, nose, and throat
 - 1. Anatomy and physiology review
 - a. The head
 - b. The neck
 - c. The ears
 - d. The nose
 - e. The mouth and pharynx
 - f. The neck
 - g. Changes with age
 - 2. Techniques of examination
 - a. The head
 - (1) The scalp
 - (a) Part the hair in several places
 - (b) Look for scaliness, lumps or other lesions
 - (2) The skull
 - (a) Observe the general size and contour of the skull
 - (b) Palpate and inspect note any tenderness, deformities or lumps
 - (3) The face
 - (a) Note the facial expression and contours
 - (b) Observe for asymmetry, involuntary movements, masses and edema
 - (4) The skin
 - (a) Observe the skin
 - (b) Note color, pigmentation, texture, thickness, hair distribution and any lesions
 - b. The eyes
 - (1) Methods to assess visual acuity
 - (a) Print
 - (b) Finger count at a distance
 - (c) Distinguish light and dark

- (d) Snellen chart
- (2) Visual fields by confrontation
 - (a) Ask the patient to look at your nose
 - (b) With both arms extended and elbows at right angles, the examiner wiggles both index fingers at the same time
 - (c) The patient is asked which finger moved
 - (d) If patient states both, the visual fields are grossly normal
 - (e) Should be performed in all four quadrants
 - i) Left - right
 - ii) Up - down
- (3) Position and alignment of the eyes
 - (a) Stand in front of the patient and survey the eyes
 - (b) Assess for position and alignment
- (4) Eyebrows
 - (a) Inspect the eyebrows
 - (b) Note the quantity and distribution and scaliness of the underlying skin
- (5) Eyelids
 - (a) Note the position of the eyelids in relation to the eyeballs
 - (b) Inspect for the following
 - i) Width of palpebral fissures
 - ii) Edema of the lids
 - iii) Color of the lids
 - iv) Lesions
 - v) Condition and direction of the eyelashes
 - vi) Adequacy with which the eyelids close
 - vii) Drainage
- (6) Lacrimal apparatus
 - (a) Briefly inspect the regions of the lacrimal gland and lacrimal sac for swelling
 - (b) Look for excessive tearing or dryness of the eyes
- (7) Conjunctiva and sclera
 - (a) Ask the patient to look up as you depress both lower lids with your thumbs, exposing the sclera and conjunctiva
 - (b) Inspect the sclera and palpebral conjunctiva for color, note the vascular pattern
 - (c) Look for nodules, swelling, or discharge
- (8) Cornea and lens
 - (a) With oblique lighting, inspect the cornea of each eye for opacities
- (9) Iris
 - (a) As you inspect the cornea and lens, inspect the iris
 - i) The markings should be clearly defined
- (10) Pupils
 - (a) Inspect the size, shape and symmetry of the pupils
 - (b) Test the pupillary reactions to light
 - i) Look for
 - a) Direct reaction
 - b) Consensual reaction

- (11) Extraocular muscles
 - (a) From about 2 feet in front of the patient, shine a light into the patient's eyes and ask the patient to look at it
 - (12) Accommodation
 - (a) Ask the patient to focus on a distant object
 - (b) Then have the person shift the gaze to a near object
 - i) Normal response
 - a) Pupil constriction
 - b) Convergence of the axes of the light
- c. Ophthalmoscope
- (1) Tool used by allied health personnel to perform a detailed exam of the eye that requires skill and practice
 - (2) Used to evaluate the following
 - (a) Cornea
 - i) Foreign bodies
 - ii) Lacerations
 - iii) Abrasions
 - iv) Infection
 - (b) Anterior chamber
 - i) Cells
 - ii) Hyphema - blood
 - iii) Hypopyon - pus
 - (c) Fundus
 - i) Retinal vessels
 - ii) Optic nerve
 - iii) Retina
 - (d) Vitreous
 - (e) Foreign bodies under eyelid
- d. The ears
- (1) The auricle
 - (a) Inspect each auricle and surrounding tissue for deformities, lumps and skin lesions, drainage, tenderness, erythema
 - (2) Mastoid
 - (a) Discoloration
 - (b) Tenderness
 - (3) Otoscope
 - (a) Tool used by allied health personnel to perform a detailed exam of the ear
 - (b) Used to evaluate the following
 - i) Any discharges
 - ii) Foreign bodies
 - iii) Redness or swelling
 - iv) Eardrum
 - a) Color
 - b) Contour
 - c) Fluid or infection behind the drum
 - d) Perforation
 - (4) Assess gross auditory acuity

- e. The nose
 - (1) Inspect the anterior and inferior surface of the nose
 - (a) Asymmetry
 - (b) Deformity
 - (c) Foreign bodies
 - (2) Palpate for tenderness
 - f. The mouth and pharynx
 - (1) Inspect the lips, observe color, moisture, note any lumps, ulcers, cracking or scaliness
 - (2) Look into the patient's mouth with a good light and a tongue blade, inspect the oral mucosa
 - (3) Note the color of the gums and teeth
 - (4) Inspect the teeth
 - (5) Inspect the color and architecture of the hard palate
 - (6) Inspect the tongue
 - (7) Inspect the tonsils
 - g. The neck
 - (1) Inspect the neck, noting its symmetry and any masses or scars
 - (2) Palpate the lymph nodes
 - (3) Inspect and palpate the trachea for any deviation
 - (4) Inspect for jugular venous distention
 - (5) Inspect the neck for the thyroid gland
 - (6) Palpate the thyroid gland from behind
 - h. Head and cervical spine
 - (a) The temporomandibular joint
 - (b) The cervical spine
 - i) Inspection
 - ii) Palpation
 - a) Tenderness
 - b) Deformities
 - iii) Range of motion
 - a) Flexion - touch the chin to the chest
 - b) Rotation - touch chin to each shoulder
 - c) Lateral bending - touch each ear to each shoulder
 - d) Extension - put the head back
- C. Chest
- 1. Anatomy and physiology
 - 2. Techniques of examination
 - a. General approach
 - (1) Have the patient expose their chest so that you can see the entire chest
 - (2) Proceed in an orderly fashion
 - (a) Inspect
 - (b) Palpate
 - (c) Percuss
 - (d) Auscultate
 - (e) Compare side to side
 - (3) Try to visualize the underlying lobes of the lungs

- b. Examination of the thorax and ventilation
 - (1) Observe rate, rhythm, depth and effort of breathing
 - (2) Check the patient for cyanosis
 - (3) Listen to the patient's breathing
 - (4) Observe the shape of the chest
- c. Examination of the posterior chest
 - (1) Inspect noting
 - (a) Any deformities or asymmetry
 - i) Barrel chest
 - ii) Traumatic flail chest
 - iii) Funnel chest
 - iv) Pigeon chest
 - v) Thoracic kyphoscoliosis
 - (b) Abnormal retractions
 - (c) Impairment of respiratory movement
 - (2) Palpate noting
 - (a) Any tender areas
 - (b) Assessment of observed abnormalities
 - (c) Further assessment of respiratory expansion
 - (3) Percuss in symmetrical locations noting
 - (a) Any area of abnormal percussion note
 - i) Percussion notes
 - a) Dullness
 - b) Resonance
 - c) Hyperresonance
 - (b) The level of the diaphragm
 - (c) Estimate of diaphragmatic excursion
 - (4) Auscultate breath sounds
 - (a) Normal
 - i) Vesicular
 - ii) Bronchovesicular
 - iii) Bronchial
 - iv) Tracheal
 - (b) Added sounds (adventitious lung sounds)
 - i) Discontinuous sounds (crackles)
 - a) Fine crackles
 - b) Course crackles
 - ii) Continuous sounds
 - a) Wheezes
 - b) Rhonchi
 - iii) Pleural friction rub
 - (c) Diminished or absent
 - i) Effusion
 - ii) Consolidation
- d. Examination of the anterior chest
 - (1) Inspect noting
 - (a) Any deformities or asymmetry
 - (b) Abnormal retractions

- (c) Impairment of respiratory movement
 - (2) Palpate noting
 - (a) Any tender areas
 - (b) Assessment of observed abnormalities
 - (c) Further assessment of respiratory expansion
 - (3) Percuss in symmetrical locations noting
 - (a) Any area of abnormal percussion note
 - (b) The level of the diaphragm
 - (4) Auscultate
 - (a) Breath sounds
 - (b) Added sounds
- D. The cardiovascular system
- 1. Anatomy and physiology
 - a. Surface projections of the heart great vessels
 - b. Events in the cardiac cycle
 - c. Heart murmurs
 - d. Relation of auscultatory findings to the chest wall
 - e. The heart as a pump
 - f. Arterial pulses and blood pressure
 - g. Jugular vein pressure and pulses
 - h. Changes with age
 - 2. Techniques of examination
 - a. The arterial pulse
 - (1) Heart rate
 - (2) Rhythm
 - (3) Amplitude
 - (4) Bruits and thrills
 - b. Blood pressure
 - c. Jugular venous pressure and pulsation
 - d. The heart
 - (1) Inspection and palpation of the chest
 - (2) Auscultation
 - (a) Listen for the heart tones
 - i) Locate the point of maximum impulse (PMI)
 - ii) Listen in the following locations
 - a) Aortic - second intercostal space to the right of the sternum
 - b) Pulmonic - second intercostal space to the left of the sternum
 - c) Third intercostal space
 - d) Fourth intercostal space
 - e) Tricuspid - lower left sternal border
 - f) Mitral - apex of the heart
 - iii) Listen for the heart tones - note their intensity
 - a) Listen for the first tone - S₁
 - b) Listen for the second tone - S₂
 - c) Listen for extra sounds - murmurs
- E. Abdomen

1. Anatomy and physiology review
2. Changes with age
3. Techniques of examination
 - a. General approach
 - (1) Ideally, the patient should not have a full bladder
 - (2) Make the patient comfortable in a supine position
 - (3) Before palpation ask the patient to point out any areas of pain - examine these areas last
 - (4) Have warm hands, a warm stethoscope and short nails
 - (5) Approach slowly and avoid quick, unexpected movements
 - (6) Distract the patient as needed with conversation
 - (7) Visualize each organ as in the region as you are examining
 - (8) Proceed in an orderly manner
 - (a) Inspection
 - (b) Auscultation
 - (c) Percussion
 - (d) Palpation
 - b. Inspection of the abdomen, including the flanks, noting
 - (1) Skin
 - (a) Scars
 - (b) Striae
 - (c) Dilated veins
 - (d) Rashes and lesions
 - (e) Discoloration
 - (f) Ascites
 - (g) Herniation
 - (2) The umbilicus
 - (a) Contour
 - (b) Location
 - (c) Signs of inflammation or hernia
 - (3) The contour of the abdomen
 - (a) Bulges
 - i) Flat
 - ii) Rounded
 - iii) Protuberant
 - iv) Scaphoid
 - v) Bulges at the flanks
 - vi) Hernias
 - (b) Symmetry
 - (4) Peristalsis
 - (5) Pulsations
 - (6) Ascites
 - c. Auscultate
 - (1) Listen for bowel sounds
 - (a) Note frequency and character
 - i) Increased
 - ii) Decreased
 - iii) Absent

- (2) Bruits
 - d. Palpation
 - (1) Muscle guarding
 - (2) Rigidity
 - (3) Large masses
 - (4) Tenderness
- F. The female genitalia
 - 1. Anatomy and physiology review
 - 2. Changes with age
 - 3. Techniques of examination
 - a. General approach
 - (1) This may be awkward or uncomfortable for the patient and the provider
 - (2) Male examiners are customarily attended by female assistants
 - (3) Female examiners may choose to work alone
 - b. Examination
 - (1) Inspect the external genitalia
 - (2) Note any
 - (a) Inflammation
 - (b) Discharge
 - (c) Swelling
 - (d) Lesions
 - 4. Abnormal findings
- G. The male genitalia
 - 1. Anatomy and physiology
 - 2. Changes with age
 - 3. Techniques of examination
 - a. General approach
 - (1) This may be awkward or uncomfortable for the patient and the provider
 - (2) Female examiners are customarily attended by male assistants
 - (3) Male examiners may choose to work alone
 - b. Examination
 - (1) Inspect the external genitalia
 - (2) Note any
 - (a) Inflammation
 - (b) Discharge
 - (c) Swelling
 - (d) Lesions
 - 4. Abnormal findings
- H. Anus
 - 4. Abnormal findings
 - 1. Anatomy and physiology
 - a. Changes with age
 - 2. Techniques of examination
 - a. General techniques
 - b. Can be accomplished with the patient in one of several positions
 - (1) For most patients, the side-lying position is satisfactory
 - (2) Drape the patient appropriately
 - (3) Inspect the sacrococcygeal and perineal areas
 - (a) Look for and note

- i) Lumps
 - ii) Ulcers
 - iii) Inflammations
 - iv) Rashes
 - v) Excoriations
 - vi) Tenderness
 - (4) Methods for testing for occult blood
- I. Extremities
 - 1. Anatomy and physiology
 - a. Structure and function of joints
 - b. Specific joints
 - c. Changes with age
 - 2. Techniques of examination
 - a. General approach
 - (1) Direct your attention to function as well as structure
 - (2) Assess general appearance, bodily proportions and ease of movement
 - (3) Note particularly
 - (a) Limitation in the range of motion
 - (b) Unusual Increase in the mobility of a joint
 - (4) In general note
 - (a) Signs of inflammation
 - i) Swelling
 - ii) Tenderness
 - iii) Increased heat
 - iv) Redness
 - v) Decreased function
 - (b) Crepitus
 - (c) Deformities
 - (d) Muscular strength
 - (e) Symmetry
 - (f) Atrophy
 - b. Patient sitting up
 - (1) Hands and wrist
 - (a) Range of motion
 - i) Make a fist with each hand
 - ii) Extend and spread the fingers
 - iii) Flex and extend the wrists
 - iv) With palms down move the hands lateral and medially
 - (b) Inspection
 - i) Swelling
 - ii) Redness
 - iii) Nodules
 - iv) Deformities
 - v) Muscular atrophy
 - (c) Palpation
 - i) Feel
 - a) Medial and lateral aspect of each distal interphalangeal joint (DIP)

- b) Proximal interphalangeal joint (PIP)
 - c) Squeeze the hand from each side between your thumb and fingers compressing the metacarpophalangeal joints (MAPS)
 - d) Each wrist joint
 - e) Any area of abnormality
 - ii) Note
 - a) Swelling
 - b) Tenderness
 - c) Bogginess
- (2) Elbows
 - (a) Range of motion
 - i) Ask the patient to bend and straighten the elbows
 - ii) Keep the arms at the sides with elbows flexed
 - iii) Supination - turn palms up
 - iv) Pronation - turn palms down
 - (b) Inspection
 - i) Support the patient's forearms with your opposite hand so that the elbow is flexed to about 70 degrees
 - ii) Examine the elbow
 - (c) Palpation
 - i) Palpate the grooves between the epicondyle and the olecranon
 - ii) Press on the lateral and medial epicondyle
 - iii) Note
 - a) Tenderness
 - b) Swelling
 - c) Thickening
- (3) Shoulders and related structures
 - (a) Range of motion
 - i) Ask the patient to
 - a) Raise both arms to a vertical position at the sides of the head
 - b) External rotation and abduction - place both hands behind the neck with elbows to the side
 - c) Internal rotation - place both hands behind the small of the back
 - ii) Cup your hands over the shoulders and note any crepitus
 - (b) Palpation
 - i) Palpate the following regions
 - a) The sternoclavicular joint
 - b) The acromioclavicular joint
 - c) The subacromial area
 - d) The bicipital groove
 - ii) Note
 - a) Tenderness
 - b) Swelling

- c. Ankles and feet
 - (a) Inspection
 - i) Observe all surfaces of the ankle and feet
 - ii) Note
 - a) Deformities
 - b) Nodules
 - c) Swelling
 - d) Calluses
 - e) Corns
 - (b) Palpation
 - i) The anterior aspects of each ankle joint
 - ii) The Achilles tendon
 - iii) Metatarsophalangeal joints
 - iv) Note
 - a) Tenderness
 - b) Bogginess
 - c) Swelling
 - (c) Range of motion
 - i) The ankle joint
 - a) Dorsiflex
 - b) Plantar flex
 - ii) The transverse tarsal joint
 - a) Inversion
 - b) Eversion
 - iii) The metatarsophalangeal joints
 - iv) Flexion of the toes
 - (1) Knees and hips
 - (a) Inspection of the knees
 - i) Note alignment and deformity
 - ii) Observe atrophy of the quadriceps
 - (b) Palpation of the knees
 - i) Palpate note
 - a) Thickening
 - b) Swelling
 - (c) Range of motion
 - i) Ask the patient to bend each knee in turn up to the chest
 - ii) Note the flexion of the hip and knee
 - iii) Assess for rotation of the hips
 - iv) Assess abduction of the hips
 - (d) Palpation of the hips
 - i) Palpate the hip joint
- J. Peripheral vascular system
- 1. Anatomy and physiology
 - a. Arteries
 - b. Veins
 - c. The lymphatic system and lymph nodes
 - d. Fluid exchange and the capillary bed
 - e. Changes with age

2. Techniques of examination
 - a. The arms
 - (1) Inspection from fingertips to shoulders noting
 - (a) Size
 - (b) Symmetry
 - (c) Swelling
 - (d) Venous pattern
 - (e) The color of the skin and nail beds
 - (f) Texture of the skin
 - (2) Palpation
 - (a) The radial pulse
 - (b) If you suspect arterial insufficiency, feel for the brachial pulse
 - (c) Feel for epitrochlear nodes
 - b. Legs
 - (1) Patient should be lying down, appropriately draped
 - (2) Successful examination cannot be completed with socks or stockings on
 - (3) Inspect from the groin and buttocks to the feet, noting
 - (a) Size
 - (b) Symmetry
 - (c) Swelling
 - (d) The venous pattern and any venous enlargement
 - (e) Pigmentation
 - (f) Rashes
 - (g) Scars
 - (h) Ulcers
 - (i) Color and texture of the skin
 - (4) Palpate the superficial inguinal nodes
 - (5) Palpate the pulses in order to assess arterial circulation
 - (a) The femoral pulse
 - (b) The popliteal pulse
 - (c) The dorsalis pedis pulse
 - (d) The posterior tibial pulse
 - (e) Note the temperature of the feet and legs
 - (f) Look for edema
 - (g) Check for pitting edema
 - i) Press firmly but gently with your thumb for at least 5 seconds
 - a) Over the dorsum of each foot
 - b) Behind each medial malleolus
 - c) Over the shins
 - c. Special techniques
 3. Abnormal finding
 1. The spine
 1. Inspection
 - a. From the side note the cervical, thoracic and lumbar curves
 - b. Note curvatures
 - (1) Lordosis
 - (2) Kyphosis

- (3) Scoliosis
 - c. Look for differences in the height of the shoulders
 - d. Look for differences in the height of the iliac crest
 - 2. Range of motion
 - a. Flexion - ask the patient to bend forward and touch the toes
 - (1) Note
 - (a) Smoothness of movement
 - (b) Symmetry of movement
 - (c) Range of motion
 - (d) Curve in the lumbar area
 - b. Lateral bending - bend sideways
 - c. Extension - back backwards toward you
 - d. Rotation - twist the shoulders one way and then the other
 - 3. Palpation
 - a. Palpate the spinous process with your thumb
 - (1) Identify tenderness
 - b. Palpate in the area of the costovertebral angle
 - (1) Identify tenderness
 - 4. Abnormal findings
- L. The nervous system
 - 1. Anatomy and physiology
 - a. Central nervous system
 - b. Peripheral nervous system
 - c. Spinal reflexes - deep tendon response
 - d. Motor pathways
 - e. Sensory pathways
 - f. Changes with age
 - 2. Techniques of examination
 - a. General approach
 - (1) Are right and left sided findings symmetrical
 - (2) Is this a peripheral or central nervous system problem
 - (3) Detail of an appropriate neurological exam varies greatly
 - (4) Components of the neurological exam may be completed during other assessments
 - (5) It may be best to organize your findings into five categories
 - (a) Mental status and speech
 - (b) Cranial nerves
 - (c) Motor system
 - (d) Sensory system
 - (e) Reflexes
 - b. The cranial nerves
 - (1) Cranial nerve I - olfactory (sense of smell)
 - (2) Cranial nerve II - optic
 - (a) Test visual acuity
 - (3) Cranial nerves II and III - optic and oculomotor
 - (a) Inspect the size and shape of the pupils
 - (b) Test the pupil response to light
 - (4) Cranial nerves III, IV, and VI

- (a) Test the extra-ocular movements in the six cardinal directions of gaze
- (5) Cranial nerve V - trigeminal
 - (a) Motor
 - i) Ask the patient to clench their teeth while palpating the temporal and masseter muscles
 - ii) Note the strength of muscle contraction
 - (b) Sensory
 - i) Explain to the patient what you will do
 - ii) Touch the forehead, cheeks and jaw on each side for pain sensation
- (6) Cranial nerve VII - facial
 - (a) Inspect the face at rest and during conversation
 - i) Note symmetry and observe for tics or abnormal movement
 - (b) Ask the patient to
 - i) Raise the eyebrows
 - ii) Frown
 - iii) Close both eyes tightly so that you cannot open them; test muscular strength by trying to open them
 - iv) Show both upper and lower teeth
 - v) Smile
 - vi) Puff out both cheeks
 - vii) Note any weakness or asymmetry
- (7) Cranial nerve VIII - acoustic
 - (a) Assess hearing
- (8) Cranial nerves IX and X - glossopharyngeal and vagus
- (9) Cranial nerve XI - spinal accessory
- (10) Cranial nerve XII - hypoglossal
- c. The motor system
 - (1) Body position
 - (a) Observe the position during movement and at rest
 - (2) Involuntary movements
 - (a) Watch for involuntary movements
 - (b) Note
 - i) Quality
 - ii) Rate
 - iii) Rhythm
 - iv) Amplitude
 - (c) Note relation to
 - i) Posture
 - ii) Activity
 - iii) Fatigue
 - iv) Emotion
 - (3) Muscle bulk
 - (a) Compare the size and contour of the muscles
 - (4) Muscle tone
 - (a) Feel the resistance to passive stretch

- (5) Muscle strength
 - (a) Ask the patient to move actively against your resistance
 - i) No muscular contraction detected
 - ii) A barely detectable flicker or trace of contraction
 - iii) Active movement of the body part with gravity eliminated
 - iv) Active movement against gravity
 - v) Active movement against gravity and some resistance
 - vi) Active movement against full resistance without evident fatigue - this is normal muscle tone
 - (b) Test flexion
 - (c) Test extension
 - (d) Test extension at the wrist
 - (e) Test the grip
 - (f) Test finger abduction
 - (g) Test the opposition of the thumb
 - (h) Test flexion at the hip
 - (i) Test adduction at the hips
 - (j) Test abduction at the hips
 - (k) Test extension at the hips
 - (l) Test extension at the knee
 - (m) Test flexion at the knee
 - (n) Test dorsi-flexion
 - (6) Coordination
 - (a) Rapid alternating movements
 - (b) Point to point movements
 - i) Finger-to-nose
 - ii) Heel-to-shin
 - (c) Gait
 - i) Walk heel to toe
 - ii) Walk on the toes
 - iii) Walk on the heels
 - iv) Hop in place
 - v) Do a shallow knee bend
 - vi) Rise from a sitting position
 - (d) Stance
 - i) The Romberg test
 - ii) Test for pronator drift
 - d. The sensory system
 - (1) General approach
 - (a) Compare symmetrical areas on the two sides of the body
 - (b) When testing pain, temperature and touch, compare distal and proximal areas
 - (c) Assess sensation in relation to dermatomes
 - (2) Pain
 - (3) Light touch
3. Abnormal findings

V. The physical examination of infants and children

- A. Approach to the patient
 - B. Techniques of examination
- VI. Recording examination findings